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RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/041,030

DATE: 04/30/2002 P

Input Set : A:\-68-1.app

Output Set: N:\CRF3\04302002\J041030.raw

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3 <110> APPLICANT: Powers, Scott
          Mu, David
  5
          Xiang, Phil
  6
          Peng, Yue
  7
          Tularik Inc.
  9^{\cdot} <120> TITLE OF INVENTION: Diagnosis and Treatment of Cancer Using Mammalian
 10
          Pellino Polypeptides and Polynucleotides
 12 <130> FILE REFERENCE: 018781-006810US
 14 <140> CURRENT APPLICATION NUMBER: US 10/041,030
 15 <141> CURRENT FILING DATE: 2001-12-28
 17 <150> PRIOR APPLICATION NUMBER: US 60/259,502
 18 <151> PRIOR FILING DATE: 2001-01-02
 20 <160> NUMBER OF SEQ ID NOS: 42
 22 <170> SOFTWARE: PatentIn Ver. 2.1
 24 <210> SEQ ID NO: 1
 25 <211> LENGTH: 7136
 26 <212> TYPE: DNA
 27 <213> ORGANISM: Homo sapiens
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 33 <221> NAME/KEY: CDS
 34 <222> LOCATION: (4039)..(5295)
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40 tgctagccat gtgatatact aatgtcagcc aaatacgggc atttacactt tcagatgttt 180
41 gccatatctg tgcacttact aattctgttt aatacaattt aaattgactc ctttaaataa 240
42 gcttatttta aaggaaattt tttgctacta taaatagaaa accattatat cctttaaata 300
43 gtaactctaa ataggaattc aaaacaaagc aacgttatta aaatttaatt taaaattaat 360
44 ttaaatttaa ttgttattaa atttttaatt attgctgttc ttcgtcagaa atgtgtcaaa 420
45 gcattgtttt catgtttgat gtcagttcct taattgtcta aacagaaaaa gcacagctaa 480
46 tgcctctagt taagcttctg tataactttt ttaaatgaaa tgcttcttag aggggaaatg 540
47 agagggcatg aatacatgtt tatatactaa agtatgattt catgtatatc agaagatctt 600
48 attatatgga accaaaatta ttctttggtt gatttaattg ttcttgaaac ttcagttttt 660
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52 agaggtgttt ttagtgtatt tgaatgatgg aaatgttttt cttaaaatat ttctgaagca 900
53 ttttttaaaa taattttttg aatttattga tgatagtagt tgtgtgttag tgtgaatgac 960
54 tggtctaaat gtgtatgtca cttccaaggg attagtaggg gtcagaatga tttgttttat 1020
55 teattgaett tteetttgae gtgttettat teattggget acatacatte cetgttgeet 1080
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RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/041,030

DATE: 04/30/2002 TIME: 15:45:55

Input Set : A:\-68-1.app

Output Set: N:\CRF3\04302002\J041030.raw

| 56 | tctcaccaaa | agtgccacta | Cacaggetgt | + atttaatta | | a aagacaagta | |
|------|------------|------------|------------|--------------|-------------|--|--------|
| 57 | gacctttttc | attcatgaga | ttcctatca | atticating | L actgtagaa | a aagacaagta a aatgaggaga | a 1140 |
| · 58 | cttttatggg | ctagctagta | ggagttttg | acciging | t ggaggtata | a aatgaggaga g tctatcagga | 1200 |
| 59 | actagggaga | gaaataaata | Caggaette | tycydaacc | Littgtaacag | g totatoagga g atgaaaaaga | 1260 |
| 60 | catgataata | ttttggggat | tatttattat | ctgateeca | t taaactgag | g atgaaaaaga g aagtgttaat | 1320 |
| 61 | tttttgttat | acttototoa | aatacatata | tatatatata | ggctgatca | g aagtgttaat g gagtettget | 1380 |
| 62 | ctgtcaccca | gactagaata | Cantontaca | r calalalata | ttttgaaat | g gagtettget | 1440 |
| 63 | gttcaagtga | tectectace | tragretere | accegggee | actgcaacc | g gagtettget t etgeeteeag c aegtgeeace | 1500 |
| 64 | acgccctgct | aatttttgta | ttettagtee | gagtagetag | gactacaggo | c acgtgccacc t ggccaggctg | 1560 |
| 65 | gtcttgaact | cctgacctca | agtgatgtta | ayacygygtt | tcaccatgti | ggccaggctg tatttccttt | 1620 |
| 66 | acacacattt | agaactacat | Ctaactotat | tatacttgg | ctttctgaad | c tatttccttt | 1680 |
| 67 | ttcagaagat | tcaagagaag | gaaagtggat | tatagtttt | actttcacca | tatttccttt tcagacaaaa | 1740 |
| 68 | tttacatctc | atattttaag | gatatattaa | thatttact | catattttc | i tcagacaaaa J ctaccgtgtt | 1800 |
| 69 | tagccattct | ttatttatag | tagatataat | clatttattt | tctgtttagt | ; ctaccgtgtt : taatttcctc | 1860 |
| 70 | tgagaatgtc | ttgacttccc | ttagatttt | ggtaacaaat | tctctcaatt | taattteete ttteetegte | 1920 |
| 71 | cttctagatt | ctataattte | tastasass | greageacet | gaaaaatact | : tttcctcgtc : atgccactat | 1980 |
| 72 | gcagtgttct | ctctctctct | ctacttaca | tccactgtca | gtctaattgt | atgccactat cgttataaat | 2040 |
| 73 | tettgagaeg | gagteteact | ctgctcccag | gatattttt | ctttttttt | cgttataaat ttttttttt | 2100 |
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| | | | aaayytytee | caayyctcct | gaccagtgaa | gaaaactttt caaagatttg | 4020 |
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DATE: 04/30/2002 PATENT APPLICATION: US/10/041,030 TIME: 15:45:55

Input Set : A:\-68-1.app

Output Set: N:\CRF3\04302002\J041030.raw

| 10 | 5 agaaagaca | g ccaageteat | t gttttctcci | t gatcaagaa | a atcatccat | c taaagcacca | 4000 |
|-----|--------------|--------------|--------------|--------------|------------------------------|--------------------------|------|
| 10 | 6 gtaaaatat | g gtgaactcai | tgtcttagg | c tataatggg | t ctctccca: | a tggcgataga | 4110 |
| 10 | 7 ggaaggagg | a aaagtaggti | tactttatt | aaaagacct | aggcaaatg | g ggtgaagcco | 4140 |
| 10 | 8 agcactgtg | c atattqctto | tactcctcac | getgeaaag | i caataadca: | a caaagaccag | 4200 |
| 109 | 9 catagcatai | t catatactt | atctcaaac | cagactgtg | i taattaagea | tactcatgac | 1220 |
| 110 | agcaacaca | g atatgtttca | gattggccg | i togactgaaa | accccatte | ttttgtagta | 4320 |
| 113 | l actgacacgo | ttcctqqaac | r tcaaagtaat | totgatacac | agtcagtac | a agcactata | 4300 |
| 112 | 2 tcaagattt | cctgcagaat | catatgtgaa | cogaateete | cetttacace | acggatttat | 4440 |
| 113 | 3 gctgcaggat | ttgactcato | aaaaaacato | tttettaaa | , agaaggetge | caaatggaag | 4560 |
| 114 | acatcagato | , gacagatgga | tggcttgacc | actaatggto | , uguuggeege , ttettataat | gcatccacgo | 4500 |
| 115 | aatgggttca | cagaagacto | caageetgga | atatggagag | , ecceptyul | gtgtggaaat | 4020 |
| 116 | gtatttagco | tacqtqaaac | cagategget | Cagcagagag | , aaatattat | ggaaattgaa | 4740 |
| 117 | accaatcagt | tacaagatga | ctcgttaatt | gacetetata | , gaaaaacggi | gttatggcgt | 4000 |
| 118 | actgcagaag | geettteeca | cactcctacc | gtgaagcatt | tagaagettt | aagacaggaa | 4800 |
| 119 | atcaatgcag | cacgacetea | gtgccctgta | gaattcaaca | Cantagott | tcctagtatg | 4000 |
| 120 | aagaggaaag | acqttqtaga | tgaaaaacaa | ccataggtat | atotagoaco | cggccatgta | 4920 |
| 121 | . catqqctatc | ataactgggg | aaacaaagaa | gaacgtgatg | . acctaaacty | tgaatgtcct | 4980 |
| 122 | atgtgtaggt | ctattaatca | ctatattcct | ctataactta | gaaaagalcg | tggattttat | 5040 |
| 123 | gtggacgccg | gccctccaac | ccatgccttt | accocatata | gacycgaago | ttcagaaaag | 2100 |
| 124 | acaactgcct | attggtgga | gateceactt | cctcatagta | gtartratt | tcatgcagcc | 2700 |
| 125 | tatccctttt | gtgcacatca | attaactaat | gaagaagget | 202t cage | tatttttcaa | 5220 |
| 126 | ggacctctag | actaacagac | cattotetto | Caddadtada | ttataaatt | ataagctaag | 5280 |
| 127 | tgagttgggt | tttcgaacct | attatacaca | tracarttt | totactatata | tcatttgcat | 5340 |
| 128 | taagatgaag | aatttttaa | aacatttata | ataaataata | cougetetgg | agcaaaaatc | 5400 |
| 129 | tgggaaactc | aagcaaagga | atttctcaea | atataaatayta | teteset | gagttttgaa | 5460 |
| 130 | aatatattt | даддадаааа | agacatagto | taatttaata | cottaattet | agtgttttgaa | 5520 |
| 131 | aatcacctat | cctcagtact | gaaattgttt | tatataaata | Collectit | tggttcaaac | 5580 |
| 132 | tatgttagtt | tacagtttgt | tocaaacatt | atasastaa | agggtactgt | tattaacttt | 5640 |
| 133 | tttctattta | tetttattat | agaaaatagg | ttagaatgt | gegacatgta | tagcatggta | 5700 |
| 134 | acgatggtgt | cacacccttg | atataaataa | tagattagta | citgatagag | ctcaaggatt | 5760 |
| 135 | tgcaaagtta | ggaagaagga | caaaaaaaaa | tatatagaga | ageaacetag | aatatggaat | 5820 |
| 136 | ttggtaaatt | agaatacttt | ataatttata | agaggaaatt | ceccaateta | acccgcgtga | 5880 |
| 137 | aaggtgtttg | tttttaacaa | Cattonage | agaccaaatt | Calactaatt | taatgtttct | 5940 |
| 138 | ctcgagcgta | gtactataac | aaaaaattaa | taataaaaa | gatttttttt | gctcctttgg | 6000 |
| 139 | atatocaatt | taatctagat | tatetattt | totocostos | cattttatat | gtttttagta | 6060 |
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| 141 | tctagaaaaa | aatcattgcc | ataagaaaaa | atataaatta | rggilcatet | agagtgactt | 6180 |
| 142 | gatttgcttt | tagaaaaaga | aatoottaat | taattattat | gcaagaaagg | ttattcgggc | 6240 |
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| 145 | ttggttggca | gatgaggagg | aatgagtgg | agattagaata | agigagactt | tggtctgttt | 6420 |
| 146 | attetetaat | tccaatatgt | cttttaatta | gegeggageg | acgcactgca | tggtctgttt | 6480 |
| 147 | ccttcccacc | Cttttttcaa | addcadage | agaaycaag | adaagtttct | tctctcccct atcaaatctt | 6540 |
| 148 | tttttgacac | ttgtagaaag | cantacact+ | ttagattaga | grigoactac | accaaatctt | 6600 |
| 149 | ttgatttgtt | tteetttaet | ttgaaaagt+ | atataataat | tagtatette | ttttaatatt tagcaaagtt | 6660 |
| 150 | ttatatata | tagcatacct | ttaatttata | gtattaget | Laactgactg | tagcaaagtt attttctttt | 6720 |
| 151 | qqtttttaaa | aaacaaaact | tattacttac | aaggates | actgttctga | attttctttt ttacttcaac | 6780 |
| 152 | tgtcgaaact | teettattt | aaaaaataat | aayooalyaa | anatas | ttacttcaac atgcatgtca | 6840 |
| 153 | ggaaacttgt | attataagtt | tattamttmt | catctyggtt | tactcaggaa | atgcatgtca tacccctttt | 6900 |
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Input Set : A:\-68-1.app

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Input Set : A:\-68-1.app
Output Set: N:\CRF3\04302002\J041030.raw

| 207 | 305 | ; | | | | 310 | | | | | 315 | | | | | 320 | |
|---|--|--|--|--|--|---|--|--|---|--|--|---|---|---|---|---|--|
| 208 | Gly | Asn | Lys | Glu | Glu | | | Glv | Lvs | Asp | | | Cvs | Pro | Met | Cys | |
| 209 |) - | | - | | 325 | | | 1 | -10 | 330 | | 014 | CID | 110 | 335 | _ | |
| 210 | Arq | Ser | · Val | Gly | Pro | Tvr | Val | Pro | Leu | Trp | Len | Glv | Cvs | Glu | | | |
| 211 | | | | 340 | | - 1 - | | | 345 | | | | 0,0 | 350 | mu | GIY | |
| 212 | Phe | Tvr | . Val | Asp | Ala | Glv | Pro | Pro | | His | Δla | Dho | Ser | | Cve | C1 ₃₇ | |
| 213 | | - | 355 | | | J-1 | | 360 | | 1110 | mu | 1 110 | 365 | 110 | Cys | GIY | |
| | | Val | Cvs | Ser | Glu | Lvs | Thr | | Δla | Tyr | Trn | Sar | | т1 о | Dro | Lou | |
| 215 | • | 370 | | ~~~ | 020 | _15 | 375 | | mu | - 1 - | 115 | 380 | GIII | 116 | PIO | neu | |
| | | | | Thr | His | Thr | | Hic | Δla | Ala | Cvc | | Dho | Cvc | 717 | II i a | |
| 217 | 385 | **** | 0_1 | | | 390 | 1 110 | 1115 | AIG | лта | 395 | FIU | File | Cys | нта | | |
| | | | Δla | Glv | Glu | | Glw | Ттт | т1 о | Arg | | Tlo | Dho | C1 = | a1 | 400 | |
| 219 | 0.1.1 | Lou | 11.2.0 | OLY | 405 | 3111 | Gry | 1 Y T | TIE | 410 | ьеи | TTE | Phe | GIII | _ | Pro | |
| | Leu | Agn | | | 403 | | | | | 410 | | | | | 415 | | |
| | | | EQ I | O NO | . 2 | | | | | | | | | | | | |
| | | | ENGT: | | | | | | | | | | | | | | |
| | | | YPE: | | 721 | | | | | | | | | | | | |
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| 220 | /22 | 3/ U | RGAN: EATUI | IDM: | HOIII |) Saj | prens | 5 | | | | | | | | | |
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| | | | EQUE | | | | | | | | | | | | | | |
| 234 | 200 | geeg | gge d | gagg | 19999 | ge ge | gggag | ıtgg | g cg | eggac | ggc | ccca | cgcg | icc d | gggg | gagggg | 60 |
| 230 | gege | | acia a | | | | | | | | | | | | | | |
| 220 | ~~~ | | 1 | ,900 | 19999 | ,9 0 | gggcg | Jucto | ge | ctgo | gtg | gggc | gggg | lcd d | jctc | ccacct | 120 |
| 238 | gcc | egeg | cgc t | ggcc | cccc | jc ct | cccc | cgcg | g cgg | jecee | agc | ctct | cgto | ica d | ccq | ctccct | 180 |
| 238 240 | gcc | cgcg | cgc t ccc t | igged iccet | cccc | jc ct | ceec ggget | cgcg | cgo cgo | accco | agc | ctct | cgto | ide e | ccga | ctccct | 180 240 |
| 238 240 242 | gccc cctc gctc | egege eette geege | ege t ece t ggt d | igged iccet iccat | cccc | je et je gg it ge | ceecc gggct eeggc | cgcg tcgcg tctg | g egg g egg g aet | cggg cggg | egct gcg | ctct | cgtg gcag | ide q led d | ccg ggt ggga | ctecet ceceet agetee | 180 240 300 |
| 238 240 242 244 | gccc cctc gctc gggg | egege ectte geege gagte | ege t eee t ggt d eag g | igged iccet iccat icgga | cccg cccg ttgt gcag | je et je gg it ge | cece ggget eegge | cgcg tcgg tctg tgcca | g egg g egg g aet g egg | jeceo jeggo legga | age get geg | ctct cago gccg gcao | cgto gcag gcggo | reg d rgc a rgc g | ccgo ggto ggga | ctecet ceceet agetee | 180 240 300 360 |
| 238 240 242 244 246 | gccc gctc gggg gggg | egege eette geege gagte eecee | ege tece t ggt d eag g ett d | gged ecct eccat egga egeeg | cccc cccc ttgt gcag | ge et ge eg ge eg | cecco ggget eegge gegea | cegeo tego teto geo eceo | g egg g act g egg g egg g egg | jecec jegge legga jeget | agc gct gcg gca cac | ctct cago gccg gcag cccg | cgtg gcag gcggg gcggg ttct | geg d ge g ge g ge g | ccgo ggto gggo ggato | ctccct cccct agctcc cgcccc | 180 240 300 360 420 |
| 238 240 242 244 246 248 | gccc cctc gctc gggg gcgc gtag | egego eetto geego gagto geego geggo | ege teec teggt of eagle | iggeo iccet iccat icgga igceg | cccg ttgt gcag ccgt | ge et ge eg ge eg ge eg | cccc gggct ccggc gcgca ccttc | ecgege tegge teteg geeg eceeg | r cgg r cgg r act r cga r cgg | jecec jegge legga jeget jegga | eage eget geg gea cae | ctct cago gccg gcag cccg | cgtg gcag gcggg gcggg ttct | geg o | ccgo ggto gggco ggato | etecet ececet agetec egecec gggatt | 180 240 300 360 420 480 |
| 238 240 242 244 246 248 250 | gccc cctc gctc gggg gcgc gtag | egego eetto geego gagto geego geggo | ege teec teggt of eagle | iggeo iccet iccat icgga igceg | cccg ttgt gcag ccgt | ge et ge ge ge ee ge ge ge ge | ceece ggget eegge gegea eette egggg | cegege tegege geeeg ateg | cc cc g cgg g act g cgg g cgg | jecec jegge leggg leggt jeget jegga | eage get geg gea eeae gge | ctct cago gccg gcag cccg ggcg | cgtg gcag gcggg gcggg ttct gcgt | geg oggeden gegen geg Leg gegen gege | ccgo ggto gcggo ggato cggo | etcect eccect agetec egecec gggatt eggegt ge gee | 180 240 300 360 420 480 |
| 238 240 242 244 246 248 250 251 | gccc cctc gctc gggg gcgc gtag | egego eetto geego gagto geego geggo | ege teec teggt of eagle | iggeo iccet iccat icgga igceg | cccg ttgt gcag ccgt | ge et ge ge ge ee ge ge ge ge | cccc gggct ccggc gcgca ccttc gggg cg tt | cegege tegege geeeg ateg | cc cc g cgg g act g cgg g cgg | jecec jegge leggg leggt jeget jegga | eage get geg gea eeae gge | ctct cago gccg gcag cccg ggcg | cgtg gcag gcggg gcggg ttct gcgt | geg oggeden gegen geg Leg gegen gege | ccgo ggto gcggo ggato cggo | etecet ececet agetec egecec gggatt | 180 240 300 360 420 480 |
| 238 240 242 244 246 248 250 251 252 | geografia | egege geege gagte gegge gegge | ege tees teggt of the common terms of the comm | eggee eceat gegga geggg geggg | cccc cccc ttgt gcag ccgt actc | ge et ge ge ge ee ge ge ee at Me | ggget ggget gegea gette ggggg g tt et Ph | cegegetetegetetegetetegetetegetetegetetegetetegetetegetegetegetegetegetegetegetegetegetegetegetegetegetegetege | g egg g act g egg g egg ee ee | geeeeggeeggeeggeeggeeggeeggeeggeeggeeg | eage get gea eac ege c ca y Gl | ctet cago gcag cccg ggcg ag ga | egte egcag eggge ettet egcgt eg ga u Gl | geg ogge g gec g gec t geg g geg g geg g | ccego gggto gggco ggato ccggo c to | ctccct ccccct agctcc cgcccc ggatt cggcgt gc gcc ys Ala | 180 240 300 360 420 480 |
| 238 240 242 244 246 248 250 251 252 254 | gete gete gggg gege gtag egge | egege ectte geege gagte ecece geggee | ege tege teget constant of the | iggec iecet ieceat gegga igegg jeggg | ccece cccece ttgt gcag ccgt acto | ge et ge eg ge eg ge eg ge ec | ggget ggget gegea eette ggggg g tt et Ph aaa | ceged teged geoeg ateged t to tac | g egg g act g egg g egg e ec er Pr | geeeegeegeegeegeegeegeegeegeegeegeegeeg | eage get gea cac egge c ca y Gl | ctct cago gccg gcag cccg ggcg ag ga n Gl | egte egcag eggg ettet egcgt eg ga u Gl | geg ogge a gge g gae t geg g .eg g .a ca .u Hi | ccgo ggto ggeo ggato ccgo c to s Cy | ctccct ccccct agetec cgcccc gggatt cggcgt gc gcc ys Ala 10 | 180 240 300 360 420 480 |
| 238 240 242 244 246 248 250 251 252 254 255 | gete gete gggg gege gtag egge | egege ectte geege gagte ecece geggee | ege tege teget constant of the | gggccccctcccat gegga geggg geggg geggg gag | ccece cccece ttgt gcag ccgt acto | ge et ge eg ge eg ge eg ge ec | ggget ggget gegea eette ggggg g tt et Ph aaa | ceged teged geoeg ateged t to tac | g egg g eet g egg c ee r Pr ggg Gly | geeeeggeeggeeggeeggeeggeeggeeggeeggeeg | eage get gea cac egge c ca y Gl | ctct cago gccg gcag cccg ggcg ag ga n Gl | egte egcag eggg ettet egcgt eg ga u Gl | geg ogge a gge g gae t geg g .eg g .a ca .u Hi | ccgo ggto ggeo ggato ccgo c to s Cy | ctccct ccccct agetec cgcccc gggatt cggcgt gc gcc ys Ala 10 | 180 240 300 360 420 480 533 |
| 238 240 242 244 246 250 251 252 254 255 256 | gete gete gggg gege gtag egge | egege ectte gegg gagte ecce gegge aat Asn | ege tece teggt controlled to the controlled to t | ggecect eccat gegga geegg geggg geggg Glu 15 | cccccccccccccccccccccccccccccccccccccc | gc ct gc gg gc cg gg gc gc at Me gtg Val | gggct gggct gggca ccttc ggggg g tt t Ph l aaa Lys | tac | g cgg g act l cga g cgg cc cc r Pr ggg Gly 20 | geeeeggg | eage eget ggca cac eggc c ca y Gl ctg Leu | ctet cage gccg gcag cccg ggcg g ga n Gl gtg Val | egtegegegegegegegegegegegegegegegegegeg | geg ogge agge geg geg geg geg geg geg geg geg | ccego gggto ggato ggato ccego ccto s Cy ggg | ctccct cccct agctcc ggcccc gggatt cggcgt gc gcc vs Ala 10 tac Tyr | 180 240 300 360 420 480 533 |
| 238 240 242 244 246 250 251 252 254 255 256 258 | geographics geogra | egege geette geegegege geggee aat Asn | ege tece teggt controlled to the controlled teggt control | ggecect eccat gegga geggg geggg Glu 15 tta | cccc ccccc ttgt gcag ccgt actc gctc | ge et ge ge ge ee ge ee ee at Me yal aat | gggct gggct gggca gcgca gcttc gggg g tt t Ph 1 aaa Lys | cegeo tegeo geceo gateo t to tac Tyr | y cgg y act y act y cgg y cgg cc cc er Pr ggg Gly 20 aga | geeeegggeegggeegggeetggggeetggggeetggggeetgggeetgggeetgggeetgggeeggeetggg | eage get gea cac gge c ca y Gl 5 ctg Leu | ctct cage gcag gcag gcggggan Gl | eggegegegegegegegegegegegegegegegegege | geg ogge ogge ogge og geg og ged et | cccgo gggto ggato ggato ccto ccto ggg Gly | ctccct cccct agctcc ggcccc gggatt cggcgt gc gcc ys Ala l0 tac Tyr | 180 240 300 360 420 480 533 |
| 238 240 242 244 246 250 251 252 254 255 256 258 259 | geographics geogra | egege geette geegegege geggee aat Asn | ege teces to get control of the cont | ggecect eccat gegga geggg geggg Glu 15 tta | cccc ccccc ttgt gcag ccgt actc gctc | ge et ge ge ge ee ge ee ee at Me yal aat | gggct gggct gggca gcgca gcttc gggg g tt t Ph 1 aaa Lys | cegece ctegece agece ategece ategece tte Tyr gat Asp | y cgg y act y act y cgg y cgg cc cc er Pr ggg Gly 20 aga | geeeeggg | eage get gea cac gge c ca y Gl 5 ctg Leu | ctct cage gcag gcag gcggggan Gl | eggegegegegegegegegegegegegegegegegege | geg ogge ogge ogge og geg og ged et | cccgo gggto ggato ggato ccto ccto ggg Gly | ctccct cccct agctcc ggcccc gggatt cggcgt gc gcc ys Ala l0 tac Tyr | 180 240 300 360 420 480 533 |
| 238 240 242 244 246 250 251 252 254 255 258 259 260 | gccc gctc gggg gcgc gtag cggc | egege gegegegegegegegegegegegegegegegeg | cgc tccc tggt ccag cctt ccgg ccga ccga c | gggccccccccccccccccccccccccccccccccccc | ccc cccgt agcag acto gctc cca Pro | ge et ge ge ge ee ee at Me yal aat Asn | gggct gggct gcgca ccttc gggg g tt t Ph 1 aaa Lys gga Gly | tac tac tac tac tac Tyr gat Asp | J cgg J cgg J act J gcg J cgg J cgg GC cc Er Pr Gly 20 aga Arg | geeeeggggeegggg | eage get gea cac gge c ca y Gl 5 ctg Leu cgg | ctet cage gcag gcag gcag ggcg gg ga n Gl gtg Val agg | egtegegegegegegegegegegegegegegegegegeg | gcg ogge ggc ggc ggc ggc ggc ggc ggc ggc ggc | ceego gggto ggato ggato e to s Cy ggg Gly aga Arg | ctccct cccct agctcc ggccc gggatt cggcgt gc gcc ys Ala l0 tac Tyr ttt Phe | 180 240 300 360 420 480 533 |
| 238 240 242 244 246 250 251 252 254 255 256 258 259 260 262 | gccc gctc gggg gcgc gtac cggc | aat Asn ggt Gly | ege tege tege tege tege tege tege tege | ggcccctcccat gcgga gccgg gcggg gag Glu 15 tta Leu | cccc ttgt gcag ccgt actc cca Pro ccc | ge et ge ge ge ee ge ge ee at ye gtg Val aat Asn | gggct gggcgca gcgca gcgttc ggggg g tt 1 aaa Lys gga Gly aag | ecgeocited of the Section of the Sec | y cgg y act y gcg y cgg y cgg y cgg GC cc r Pr ggg Gly 20 aga Arg | geeeeggggeeggg | eage get geg gea cac ggc c cac y Gl 5 ctg Leu cgg Arg | ctet cage gceg gceg ggeg g ga n Gl gtg Val agg Arg | egtegegegegegegegegegegegegegegegegegeg | geg ogge gge gge gge gge gge gge gge gge | ceego ggto gggco ggato ggato ceto ceto ggg Gly aga Arg | ctccct cccct agctcc ggcccc gggatt cggcgt gc gcc rs Ala l0 tac Tyr ttt Phe | 180 240 300 360 420 480 533 |
| 238 240 242 244 246 250 251 252 254 255 256 258 260 262 263 | gccc gctc gggg gcgc gtac cggc | egege gegte gagte geggee aat Asn ggt Gly ctc | ege tege tege tege tege tege tege tege | ggcccctcccat gcgga gccgg gcggg gag Glu 15 tta Leu | cccc ttgt gcag ccgt actc cca Pro ccc | ge et ge ge ge ee ge ge ee at ye gtg Val aat Asn | gggct gggcgca gcgca gcgttc ggggg g tt 1 aaa Lys gga Gly aag | ecgeocited of the Section of the Sec | y cgg y act y gcg y cgg y cgg y cgg GC cc r Pr ggg Gly 20 aga Arg | geeeegggeegggeegggeetggggeetggggeetggggeetgggeetgggeetgggeetgggeeggeetggg | eage get geg gea cac ggc c cac y Gl 5 ctg Leu cgg Arg | ctet cage gceg gceg ggeg g ga n Gl gtg Val agg Arg | egtegegegegegegegegegegegegegegegegegeg | geg ogge gge gge gge gge gge gge gge gge | ceego ggto gggco ggato ggato ceto ceto ggg Gly aga Arg | ctccct cccct agctcc ggcccc gggatt cggcgt gc gcc rs Ala l0 tac Tyr ttt Phe | 180 240 300 360 420 480 533 581 |
| 238 240 242 244 246 250 251 252 254 255 256 258 260 262 263 264 | gccc gctc gggg gcgc gtac cggc cggc | aat ggt Gly ctc Leu 45 | aag Lys gct Ala 30 tac Tyr | ggcccctcccat gcgga gcggg gcggg gag Glu 15 tta Leu aag | ccccccttgt gcag ccgt actc gctc cca Pro ccc Pro | gc ct gc gg gc cc gg gc gg gc gc at yal aat Asn ccc Pro | gggct gggcgca gcgca gcgttc gggg g tt 1 aaa Lys gga Gly aag Lys | tegecetere gecee gategetere tac Tyr gat Asp 35 gca Ala | y cgg y act y gcg y cgg y cgg y cgg y cgg y cgg acc co ggg Gly 20 aga Arg | geeeegeggeeegggaeegggaeegggaeegggaeegggaeegggaeegggaeegggaeegggaeegggaeegggaeggaegggae | eage get geg gea cac ggc c cac y Gl 5 ctg Leu cgg Arg | ctet cage gceg gcag cceg ggeg g ga n Gl gtg Val agg Arg aaa Lys | gcag gcag gcggg gcttct gcgt g ga u Gl yval aaa Lys ccc Pro | geg ogge gge gge gge gge gge gge gge gge | eccgo gggto gggco ggato ggato cc to cc to ggg Gly aga Arg acc | ctccct cccct agctcc ggcccc gggatt cggcgt gc gcc xs Ala 10 tac Tyr ttt Phe gtc Val | 180 240 300 360 420 480 533 581 |
| 238 240 242 244 246 250 251 252 254 255 256 262 263 264 266 | gccc gctc gggg gcgc gtag cggc ccgc ccat Asn gcc Ala | aat Asn ggt Ctc Leu 45 gtg | cgc to cgg to cgg cgg cgg cgg agg Lys gct Ala 30 tac Tyr ata | ggcccctcccat gcgcggggggggggggggggggggggg | ccc cccg tagtag ccgt actc gctc cca Pro ccc Pro | ge et ge ge ge ee ee at ge ge val aat Pro | gggct gggct gcggc gcttc gggg g tt t Ph l aaa Lys gga Gly aag Lys cag | ctcgccctcgctcccgatcgcttcgctttac Tyr gat Asp gca Ala gca | g cgg g cgg g act g cgg g cgg cc cc er Pr ggg Gly 20 aga Arg aat Asn | geeee geggg leggg legga geget gegga to Gl gag Glu gga Gly ggt Gly | eage get geg gea cac ggc cac y Gl 5 ctg Leu cgg Arg ytc Val | ctet cage gcag gcag gcag gg ga n Gl yal agg Arg aaa Lys atc | egtegegegegegegegegegegegegegegegegegeg | gcg cagge ggc ggc ggc ggc ggc ggc ggc ggc ggc | cccgo ggto ggato ggato ccggo ccto scygo ggg Gly aga Arg acc Thr | ctccct ccccct agctcc ggcccc gggatt cggcgt Jc gcc ys Ala 10 tac Tyr ttt Phe gtc Val | 180 240 300 360 420 480 533 581 |
| 238 240 242 244 246 250 251 252 254 255 256 262 263 264 266 267 | gccc gctc gggg gcgc gtag cggc ccgc aat Asn gcc Ala cat | aat Asn ggt Ctc Leu 45 gtg | cgc to cgg to cgg cgg cgg cgg agg Lys gct Ala 30 tac Tyr ata | ggcccctcccat gcgcggggggggggggggggggggggg | ccc cccg tagtag ccgt actc gctc cca Pro ccc Pro | gc ct gc gc tc gc gc cc gg gc cc at yal aat Asn ccc Pro | gggct gggct gcggc gcttc gggg g tt t Ph l aaa Lys gga Gly aag Lys cag | ctcgccctcgctcccgatcgcttcgctttac Tyr gat Asp gca Ala gca | g cgg g cgg g act g cgg g cgg cc cc er Pr ggg Gly 20 aga Arg aat Asn | geeeegeggeeegggaeegggaeegggaeegggaeegggaeegggaeegggaeegggaeegggaeegggaeegggaeggaegggae | eage get geg gea cac ggc cac y Gl 5 ctg Leu cgg Arg ytc Val | ctet cage gcag gcag gcag gg ga n Gl yal agg Arg aaa Lys atc | egtegegegegegegegegegegegegegegegegegeg | gcg cagge ggc ggc ggc ggc ggc ggc ggc ggc ggc | cccgo ggto ggato ggato ccggo ccto scygo ggg Gly aga Arg acc Thr | ctccct ccccct agctcc ggcccc gggatt cggcgt Jc gcc ys Ala 10 tac Tyr ttt Phe gtc Val | 180 240 300 360 420 480 533 581 629 |
| 238 240 242 244 246 250 251 252 254 255 258 260 262 263 264 266 267 268 | gccc gctc gggg gcgc gcggc ccggc ccgc aat Asn gcc Ala cat His | aat Gly ctc Leu 45 gtg Val | cgc tccc tggt cccc tcgg cccc aag Lys gct Ala 30 tac Tyr ata Ile | ggcccctcccat gcgga gcggg gag Glu 15 tta Leu aag Lys | ccce ccce ttgt gcag ccgt actc cca Pro ccc Pro cgg Arg | gc ct gc gc tt gc gc gc gc gc gc at ycal aat Pro ccc Pro 65 | gggct gggct ggga gcttc gggg g tt t Ph 1 aaa Lys gga Gly aag Lys cag | teged teged geoceg ateg at te at tac Tyr gat Asp 35 gca Ala | g cgg g act l cga g cgg cc cc er Pr ggg Gly aga Arg aat Asn tcc Ser | geeeeggggggggggggggggggggggggggggggggg | eage get geg gea eage c ca y Gl 5 ctg Leu cgg Arg gtc Val get Ala 70 | ctct cage gcag gcag gcag ggcg gg ga n Gl yal agg Arg aaa Lys atc | gcag gcag gcggg ttct gcgt g ga u Gl yal aaa Lys ccc Pro agc | gcg cagge ggc ggc ggc ggc ggc ggc ggc ggc ggc | eccgo gggto ggato ggato ccggo cc to sc Cy ggg Gly aga Arg acc Thr | ctccct ccccct agctcc ggatt cggcgt gc gcc ys Ala 10 tac Tyr ttt Phe gtc Val ggt Gly 75 | 180 240 300 360 420 480 533 581 629 |
| 238 240 242 244 246 250 251 252 254 255 258 260 262 263 264 266 267 268 270 | gccc gctc gggg gcgc gcggc ccggc ccc Pro aat Asn gcc Ala cat His 60 caa | aat Asn ggt Ctc Leu 45 gtg Val Cac | cgc to cgg to cgg ag cctt cgg ag cga gg ag Lys Ala 30 tac Tyr ata Ile | ggccctcccat gcgga gcggg gag Glu 15 tta Leu aag Lys | cca cca cca cca cca pro cca Pro ccc Pro cgg Arg | gc ct gc gc tr gc gc gc gc at gc at Val aat Pro ccc Pro tac | gggct gggct gggg gcttc ggggg gtt h l aaa Lys gga Gly aag Lys cag Gln | teged teged georgiated tac Se tac Tyr gat Asp 35 gca Ala gca Ala | g cgg g cgg g act g cgg g cgg cc cc er Pr ggg Gly aga Arg aat Asn tcc Ser | geeee gegge reggg regga geggt gegga to Gl gag Glu gga Gly ggt Lys | eage get geg gea eage cage for ca y Gl 5 ctg Leu cagg Arg gtc Val gct Ala aat | ctet cage gcag gcag gcag gg ga n Gl gtg Val agg Arg aaa Lys atc Ile | gcag gcag gcggg ttct gcgt g ga u Gl Val aaa Lys 40 ccc Pro agc | gcg cagge ggc ggc ggc ggc ggc ggc ggc ggc ggc | eccgo gggto gggco ggato ccggo cc to sc Cy ggg Gly aga Arg acc Thr | ctccct ccccct agctcc ggcccc gggatt cggcgt gc gcc ys Ala lo tac Tyr ttt Phe gtc Val ggt Gly 75 gtg | 180 240 300 360 420 480 533 581 629 |
| 238 240 242 244 246 250 251 252 254 255 256 258 260 262 263 264 266 270 271 | gccc gctc gggg gcgc gcggc ccggc ccc Pro aat Asn gcc Ala cat His 60 caa | aat Asn ggt Ctc Leu 45 gtg Val Cac | cgc to cgg to cgg ag cctt cgg ag cga gg ag Lys Ala 30 tac Tyr ata Ile | ggccctcccat gcgga gcggg gag Glu 15 tta Leu aag Lys | cca cca cca cca cca pro cca Pro ccc Pro cgg Arg | gc ct gc gc tr gc gc gc gc at gc at Val aat Pro ccc Pro tac | gggct gggct gggg gcttc ggggg gtt h l aaa Lys gga Gly aag Lys cag Gln | teged teged georgiated tac Se tac Tyr gat Asp 35 gca Ala gca Ala | g cgg g cgg g act g cgg g cgg cc cc er Pr ggg Gly aga Arg aat Asn tcc Ser | geeee geggg leggg legga geget gegga to Gl gag Glu gga Gly ggt Gly | eage get geg gea eage cage for ca y Gl 5 ctg Leu cagg Arg gtc Val gct Ala aat | ctet cage gcag gcag gcag gg ga n Gl gtg Val agg Arg aaa Lys atc Ile | gcag gcag gcggg ttct gcgt g ga u Gl Val aaa Lys 40 ccc Pro agc | gcg cagge ggc ggc ggc ggc ggc ggc ggc ggc ggc | eccgo gggto gggco ggato ccggo cc to sc Cy ggg Gly aga Arg acc Thr | ctccct ccccct agctcc ggcccc gggatt cggcgt gc gcc ys Ala lo tac Tyr ttt Phe gtc Val ggt Gly 75 gtg | 180 240 300 360 420 480 533 581 629 677 |
| 238 240 242 244 246 250 251 252 254 255 258 260 262 263 264 266 267 268 270 | gccc gctc gggg gcgc gcggc ccggc ccc Pro aat Asn gcc Ala cat His 60 caa | aat Asn ggt Ctc Leu 45 gtg Val Cac | cgc to cgg to cgg ag cctt cgg ag cga gg ag Lys Ala 30 tac Tyr ata Ile | ggccctcccat gcgga gcggg gag Glu 15 tta Leu aag Lys | cca cca cca cca cca pro cca Pro ccc Pro cgg Arg | gc ct gc gc tr gc gc gc gc at gc at Val aat Pro ccc Pro tac | gggct gggct gggg gcttc ggggg gtt h l aaa Lys gga Gly aag Lys cag Gln | teged teged georgiated tac Se tac Tyr gat Asp 35 gca Ala gca Ala | g cgg g cgg g act g cgg g cgg cc cc er Pr ggg Gly aga Arg aat Asn tcc Ser | geeee gegge reggg regga geggt gegga to Gl gag Glu gga Gly ggt Lys | eage get geg gea eage cage for ca y Gl 5 ctg Leu cagg Arg gtc Val gct Ala aat | ctet cage gcag gcag gcag gg ga n Gl gtg Val agg Arg aaa Lys atc Ile | gcag gcag gcggg ttct gcgt g ga u Gl Val aaa Lys 40 ccc Pro agc | gcg cagge ggc ggc ggc ggc ggc ggc ggc ggc ggc | eccgo gggto gggco ggato ccggo cc to sc Cy ggg Gly aga Arg acc Thr | ctccct ccccct agctcc ggcccc gggatt cggcgt gc gcc ys Ala lo tac Tyr ttt Phe gtc Val ggt Gly 75 gtg | 180 240 300 360 420 480 533 581 629 677 |

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/10/041,030

DATE: 04/30/2002 TIME: 15:45:56

Input Set : A:\-68-1.app

Output Set: N:\CRF3\04302002\J041030.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the $\langle 220 \rangle$ to $\langle 223 \rangle$ fields of each sequence which presents at least one n or Xaa.

Seq#:9; N Pos. 1,25
Seq#:12; N Pos. 1,29

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/041,030

DATE: 04/30/2002 TIME: 15:45:56

Input Set : A:\-68-1.app
Output Set: N:\CRF3\04302002\J041030.raw

L:634 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:0 L:686 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12 after pos.:0